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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/490,748	01/25/2000	Mark P. Bendett	1014.002US1	7587

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EXAMINER
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ZAHN, JEFFREY N

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/490,748

Applicant(s)

BENDETT ET AL.

Examiner

Jeffrey N Zahn

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Regarding Claims 1-45, 1) it is unclear how/where the diode pump laser is positioned relative to the substrate, i.e. "adjacent" is too general of a term, 2) how the pump laser is positioned so that light is absorbed along a length of the waveguide and 3) the Applicant has claimed a pump laser with "an extended waveguide laser resonator cavity" without reciting any structure to support this feature; therefore, this claimed feature is indefinite. The claim should recite the elements of a "pump laser with an extended waveguide laser resonator cavity" and relate these elements/features to the remainder of the claimed invention, i.e. the waveguide substrate etc.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the features/elements described in Fig. 1 as the embodiment of the invention. Specifically, 1) the reflectors/DBR gratings that make up the resonant cavity of the waveguide resonator, 2) the cavity length relationships and 3) the DBR grating spacing.

Claims 17-22 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: all the steps associated with the laser light propagating through the device of Fig. 1 as discussed above.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-5, 11, 17-19, 23-29, 32-33, and 39-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (US 5142660).**

Regarding Claim 1, Chang et al. discloses a an optical component comprising:  
a glass substrate doped with a laser species (Fig. 1; see also col. 3, line 4- col. 4, line 23);  
a waveguide (14) defined within the substrate (12); and  
a diode pump laser (PUMP LIGHT as indicated on Fig. 1; also (28)), with an extended diode laser cavity (between 35 and 36; Fig.1) being positioned adjacent the substrate waveguide so that pump light from along a length of the extended waveguide of the diode laser's resonator cavity is transferred into the substrate waveguide (15) along a length of the substrate waveguide (Fig. 1).

Claim Interpretation Explanation: the term "adjacent" and "absorbed along a length" are given the broadest reasonable interpretation. Here, "adjacent" is interpreted as including from an end facet of the substrate/waveguide region and "absorbed along a length" includes the implication from Fig. 1 of Chang et al. that pump light will travel through the waveguide and be absorbed at different points along the longitudinal direction of the waveguide.

Regarding Claims 2 and 3, Chang et al. discloses the substrate doped with Yb and Er (col. 3, line 4- col. 4, line 23).

Regarding Claim 4, Chang et al. discloses the substrate waveguide including a laser resonator cavity (Fig. 1; col. 3, line 4- col. 4, line 23).

Regarding Claim 5 and 11, Chang et al. discloses a reflection grating (72) that provides feedback to the substrate waveguide's laser resonator cavity.

Regarding Claims 17-19, the steps recited are inherent of the Chang et al. disclosure discussed above.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 6-10, 12-16 and 20-22, 30-31 and 34-38 rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. as applied to Claims 1-5, 11, 17-19, 23-29, 32-33 and 39-41, and further in view of Kaminow et al. (US 4039249).**

Regarding Claims 6-10 and 12-16, Chang et al. as applied to the claims above lacks a cladding deposited on the substrate waveguide, the cladding being composed of an electro-optic polymer with a variable index of refraction; and electrodes for applying an electrical potential across the grating cladding to vary the index of refraction in accordance therewith and thereby vary the wavelength of light reflected by the grating. Kaminow et al. teaches the use of these claimed features (abstract and Fig. 1; see also col. 1, line 54- col. 3, line 10) to facilitate tuning an optical component to a desired wavelength by applying an electrical field across the gratings of the waveguide/substrate structure (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chang et al. as claimed to include these features.

Regarding Claims 20-22, the claimed steps are inherent of the teachings described above regarding Claims 6-10 and 12-16.

### ***Response to Arguments***

The Arguments filed by the Applicant on 18 June 2003, in Paper No. 17, have been considered but not are persuasive.

Regarding Claims 1-45, as rejected under 35 U.S.C. 112, second paragraph, the Applicant makes the argument that these rejections are traversed because the claims

are clear to a person of skill in the art as they are written, page 12-13 of Response entered 08 July 2003 as Paper No. 17. Specifically, the Applicant argues that the term “adjacent” is only broad and not indefinite. This argument is unpersuasive because the term “adjacent” as provided in the Claims is indefinite for not establishing the metes and bounds of the claimed invention to one of ordinary skill in the art. The term “adjacent” does not provide to the reader the relative placement of the “extended diode laser cavity.” Only that the “extended diode laser cavity” is somewhere near the substrate waveguide.

Regarding the Applicant’s arguments relative to prior art rejections, pages 13-17 of Paper No. 17. These arguments are unpersuasive because the claims are given their broadest reasonable interpretation for purposes of examination.

Regarding Claims 1-5, 11, 17-19, 23-29, 32-33, and 39-45, as rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (US 5142660), the Applicant makes the argument that Chang et al. does not describe nor suggest an “extended waveguide within the diode laser’s resonator cavity”, page 13, 3<sup>rd</sup> paragraph. The “extended waveguide within the diode laser’s resonator cavity” is not given the patentable weight the Applicant assumes because of the indefiniteness issues addressed above, under 35 U.S.C. §112, para. 2. Chang et al. discloses an extended laser cavity (Fig. 1) that is not integrated within the diode pump light; however, the Applicant’s claims do not support the integration of the extended laser cavity and pump diode, as they are written.

Regarding Claims 6-10, 12-16 and 20-22, 30-31 and 34-38, as rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. as applied to Claims 1-5, 11, 17-

19, 23-29, 32-33 and 39-41, and further in view of Kaminow et al. (US 4039249), the Applicant argues that Chang et al. does not form a laser cavity with its gratings and therefore modifying it with a tunable pass grating, as taught in Kaminow et al., does not result in the present invention of the pending claims", page 15, 1<sup>st</sup> full para. This agreement is not persuasive because Chang et al. discloses a cavity (between 35 and 36; Fig.1) that can be modified with a tunable pass grating as claimed and taught by Kaminow et al.

As discussed above, the claims are indefinite and consequently the claims read on the prior art cited. It is clear from the specification, and in particular Fig 2A and Fig 2B, if the Applicant amends the claims to be more definite and commensurate with the embodiments of the invention as described in the specification, the claims would not read on the prior art cited.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Jeffrey Zahn

*Jf Zahn*  
*2/8/2007*

*Paul Ip*  
*SP82828*